

A small but elegant building, of the latter part of the fourteenth century, showing the transition from the decorated to the perpendicular styles. Drawings of the chapel are about to be published by the society, and an accurate estimate has been obtained of the cost of building a copy of it, which would be 280*l*.

ELEMENTARY ESSAY ON MORTAR AND CEMENTS.

BY JAMES WYLBORN, MON. SEC. S.M.A.S.D.
(Continued from p. 262.)

MADDER'S PATENT PORTLAND CEMENT.

TURNER has lately been introduced into the London market, by Messrs. Maude, Son, and Co., of Upper Ordnance Wharf, Rotherhithe, a cement which bids fair to leave in the rear all other competitors for distinction in that line. Though a recent introduction to London, its excellence has been successfully tested by many years' experience not only in and about Wakefield, where the manufacture was carried on by Mr. Asplin, the inventor, but throughout the northern counties of England, where its extensive use is the best testimony to its superiority. The expense of conveyance, and the comparatively high price of the cement itself, had, however, deterred the proprietors hitherto from attempting its introduction into the metropolis to any important extent; but the firm above named have at length surmounted those obstacles, by concluding arrangements with the son of the patentee, empowering them to manufacture it in town; by which means the London price of the article is considerably reduced, and increased facilities are made available for its most perfect preparation. The distinguishing properties of the Portland cement, which, indeed, are essential to a good cement, each and all of which it possesses in an eminent degree, are—

1st. That which is a permanent recommendation, viz. a very remarkable resemblance to Portland stone (from which circumstance it derives its name), and its permanently retaining its resemblance to that material; thus obviating a serious annual outlay for colouring or painting, the necessity whereof is inseparable from other cements, but which, for this, is not only unnecessary, but would be a preceding evil, as much had taste as the injuriously covering the beautiful stone itself.

2ndly. Its perfect freedom from any liability to be changed, in its substance or superficially, by atmospheric influences, whatever the season or the climate, having none of those tendencies to regitate and oxydise which so commonly shew themselves in cements.

3rdly. The extraordinary strength of its cementitious quality, which admits of its receiving more sand than any other cement now in use; and, indeed, is the circumstance enabling the proprietors to offer it in competition with other cements, which the cost would otherwise preclude.

From the ease with which it is worked, its extreme hardness, adheiveness, uniformity, and durability, and being impervious to damp, it is universally well-calculated for all the variety of uses to which cements are applied; and when the expense of stone ashlar in London is considered, the incomparable superiority of its appearance over that of the ordinary stuccoing, and the unquestionable imitation of it which this cement affords, no doubt can be entertained of its obtaining that decided preference to which it is so highly entitled.

For carrying on any brick-work, where the necessity for superior strength, or its immediate hardening, without setting, requires that a cement superior to common lime mortar should be used, one part of the Portland cement of the best quality (there being two sorts), and four parts of clean, dry river-sand, form the admixture recommended. For stuccoing, one part of the best cement, and four parts of sand, or one part of the second quality, and three parts of sand, are proper. The materials being mixed with water to the consistency of mortar, are applied immediately, and are finished in one coat. In damp situations a smaller proportion of sand should be employed in the admixture; and for building in water the cement should be used alone. The building materials with which it is to be brought into use, must be of the best quality, and thoroughly wetted previous to its application.

(especially in summer), to prevent the too rapid absorption of moisture.

Nor is it merely for building, exterior stuccoing, and the usual adjuncts of balusters, chimney-pots, copings, &c., that it is suitable; for it is also well adapted for landings and paving, both plain and ornamental; its compact and enduring nature, together with its uniformity of surface, renders it superior to Yorkshire paving stone, the laminar structure of which is exceedingly objectionable, where it is subject to the vicissitudes of the weather, or being within doors, it has to be frequently cleansed by washing; from this disadvantage the artificial Portland cement paving is, from the nature of the method observed in making it, quite free. In the inclosed quadrangle of Trafalgar-square, to which Mr. Barry has devoted so much care and attention, the darker asphaltic paving is relieved by portions executed in the Portland cement; the lining of the basins for the fountains is also of the same composition, the preference being awarded to it in consequence of its great resistance to the action of the atmosphere and of water, and from its possessing and retaining so eminently the texture and color of stone.

For friezes in bas-relief, and other similar purposes, it is peculiarly available, on account of the baking that is necessary in every artificial stone being dispensed with in this, thus obviating that warped irregularity in the plane surface and joints which has formed the stumbling-block to their general application. For sculpture generally, as applied to architectural embellishments, it needs no exertion of fancy to perceive that so felicitous a material is not only most suitable, but that it is suggestive even of a more ambitious range of design.

and presents facilities for embodying any triumph of conception; a consummation which, however devoutly it might be wished, was utterly unachievable in Roman cement, as the deificons of Battle-bridge have not yet had time to forget.

With regard to the expense of the Portland cement, it appears, according to the statement of the proprietors, that paving can be laid down below the price of the commonest Yorkshire paving-stone; and that, for stuccoing, if the best cement be used with four-fifths of sand, the composition will cost somewhat less than that formed of equal parts of Roman cement and sand, which is inferior in strength and appearance, and involves the necessity for frequent re-colouring.

In order to test the comparative strength of the Portland and Roman cements, Messrs. Griswold and Petit caused a series of experiments to be made in October last, at the new House of Parliament, under their own superintendence; three experiments and their results are exhibited in the diagrams appended to this paper, and the tabular comparisons accompanying them. The deductions thence arrived at shew an advantage on the side of the Portland cement, which speaks most strongly in its favour; and which, judging by the authority from which these contrasts emanate, must be considered as of an authentic and conclusive, establishing this in fact, beyond all doubt, decidedly superior to the Roman cement, whether as to strength, adhesion, or the capability of receiving sand, the latter of which properties it is shewn to possess to such a degree as to render it actually cheaper than the other; whilst its other recommendations, of beauty and the saving of colouring, alone render it highly preferable.

EXPERIMENTS at the new House of Parliament, made by order of and under the superintendence of Messrs. Griswold and Petit, October, 1843.

ROMAN CEMENT.

FIRST TRIAL.—Half Brick Beam, 3 courses deep, tested on third day after formation.

Elevation.

Section.



ROMAN BEAM.

Weight on Beam when broken down.

	C.	Q.	lb.
1 of sand and 1 of cement	2	3	11

PORTLAND CEMENT.

FIRST TRIAL.—Half Brick Beam, 3 courses deep, tested on third day after formation.

Section.



PORTLAND BEAM.

Weight on Beam when broken down.

	C.	Q.	lb.
1 of sand and 1 of cement	5	2	18
2 ditto 1 ditto	4	1	14
3 ditto 1 ditto	3	1	25

SECOND TRIAL.—One Brick Beam, 3 courses deep, tested on tenth day after formation.

Elevation.

Section.



ROMAN BEAM.

Weight on Beam.

	C.	Q.	lb.
1 of sand and 1 of cement	2	1	15

PORTLAND BEAM.

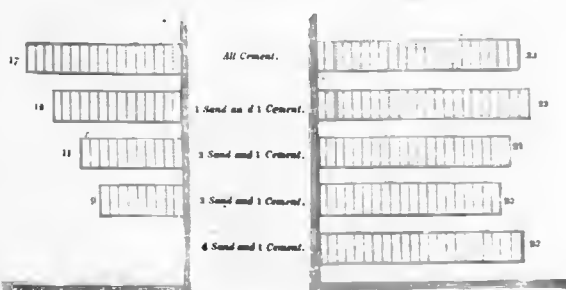
Weight on Beam.

	C.	Q.	lb.
1 of sand and 1 of cement	7	1	25
2 ditto 1 ditto	8	3	16
3 ditto 1 ditto	6	0	0
4 ditto 1 ditto	5	2	0

THIRD TRIAL.

ROMAN CEMENT.

PORTLAND CEMENT.



NOTE.—The figures in the diagrams are the weights applied before the beams broke from the wall. These weights by deduction were found to be the same as the weights applied to the beams.